REMARKS

Claims 1 and 8 were rejected as unpatentable over Beauducel in view of Palmer. Claims 2-4 and 11 were rejected as unpatentable over Beauducel in view of Palmer in view of Potratz. Claim 5 was rejected as unpatentable over Beauducel in view of Palmer in view of Scott. Claims 6-7 were rejected as unpatentable over Beauducel in view of admitted prior art. Applicant requests reconsideration and continued examination.

The examination has used forbidden hindsight reconstruction to improperly arrive at the obviousness rejection. The office action of 4/1/04 states that "In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgement on obviousness is in a sense necessarily a reconstruction based upon hindsight REASONING. So long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. (In re McLaughlin, 443, F.2d 1392, 170 USPQ 209, (CCPA 1971). The examination is not engaging in hindsight reasoning, but rather tortured reasoning, that, in and of itself, evinces nonobviousness.

The patent laws specify that obviousness of an invention is to be determined as of the time the invention was made. Thus, the prior art includes only references prior to the date of invention.

The doctrine of forbidden hindsight precludes reconstruction based upon knowledge learned after the date of invention. Forbidden hindsight supporting contention of obviousness is evinced by an interpretation of the reference, which could be made only by hindsight. Diamond Rubber Co v. Consolidated Rubber Tire Co., 220 US 428; 55 Led2d 817, 106 SCt 444 (US 1911); In re Rosenberger, 386 F2d 1015, 156 USPQ 24 (CCPA 1967).

The examination recitation failed to respond to applicant's argument with a proper analysis. Applicant deserved more than an apparent summary reliance of the word "judgement". It is not the examiner's judgment that is controlling, but rather the teachings of the cited references as teachings of the skills of one skilled in the art. Here, the examination did not provide specific teachings to justify the rejection, but rather used unexacting terms such as "used with" and "judgment".

The previous examination statement that Palmer teaches the sigma-delta modulators have been "USED WITH" a laser is devoid of specificity and articulated analysis as to how sigma-delta modulators are used with a laser in Palmer. That is, the examination fails to consider the explicit teachings of the cited references for what they fairly teach. Palmer teaches a sigma-delta modulator for generating a local oscillator clock signal that is used for modulating an laser output using a conventional modulator, whereas the present invention uses sigma-delta modulator for modulating an input analog signal into a binary output signal that then drives a laser transmitter. Nowhere in Palmer is there a

teaching to modulate an input analog signal by a sigma-delta modulator. The DIGITAL input signal that is to be transmitted in Palmer is first processed through elements 12, 14, 16, 18, and 20 where it is then modulated by multipliers 24 and 28, that are conventional mixers, and summed by a summer 30, and then amplified by amplifier 32, modulated by modulator 36, and then finally transmitted using a laser transmitter 34. The local oscillator 26 provides the coherent clock modulation signal and is used to drive multiplier 24 and 28 as modulators. SIGNIFICANTLY, Palmer teaches that the local oscillator 26 can be a VCO, PLO, DRU, or a sigma-delta modulator. (Col.3 line 37-46) Hence, Palmer is teaching the use of a sigma-delta modulator as a local oscillator for driving a modulator. It would be helpful that the examination recognize and acknowledge the explicit teachings of the cited reference Palmer. Palmer teaches digital input signal modulation using multipliers 24 and 28. Palmer teaches using a sigma-delta modulator 26 for generating a local oscillator signal that drives the multipliers 24 and 28 as modulators. Palmer teaches away from using a sigma-delta modulator for modulating an analog input signal. The present invention teaches using a sigma-delta modulator for modulating an input analog signal. Palmer teaches the use of a local oscillator 26 for synchronized laser communications. The present invention solves the problem of synchronized laser communications. Palmer teaches away from the invention as to both the problem solved and the solution.

A reference is considered in its entirety for what it fairly suggests to one of ordinary skill in the art. It is impermissible

within the framework of 35 USC 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. In re Wesslau, (CCPA 1965) 147 USPQ 391.

The term "used with" is used "only so much" as necessary to support the examination position. This is, of course, a natural result when the examination engages in forbidden hindsight reconstruction, and does not rely on explicit recited teachings, as requested by the applicant. That is, the examination reconstructs the claimed invention, not by required cited reference teachings, but by improperly reconstructing the claimed invention, when there are no teachings in the cited references to do so. That is, the examination gleaned from the present specification, after the invention was made, that a sigma-delta modulator is used to generate a binary signal for driving a laser transmitter (the solution) operating asynchronously (the problem solved). The examination then equates Palmer's teaching that a sigma-delta modulator can be used as a local oscillator within a laser communication system, with a vague teaching that the sigma-delta modulator can be "used with" a laser, and then with the present invention particular teaching that a sigma-delta modulator is used to modulate an analog input signal and directly drive a laser transmitter with a binary signal, that solves the problem of synchronized laser communications. This improper equation is based on the teachings of the present invention, not Palmer, and hence,

the unsupported interpretation of the teachings of Palmer is classical hindsight reconstruction and evinces nonobviousness.

The examination confuses hindsight reasoning with hindsight reconstruction. Hindsight reasoning looks to prior art teachings and determines whether those prior art teachings suggest the claimed combination. Forbidden hindsight reconstruction looks to claimed combination and finds prior art teachings of the elements of the claimed combination, and then, improperly combines the elements along the lines of the claimed invention without required prior art teachings to do so, and hence, improperly relies upon the teachings of the present invention. Here, the examination found that cited references suggest that the sigma-delta modulator drives a laser as in the present claims. This was learned from the present specification after the invention was made and not from Palmer. The examination, in hindsight, conveniently picks out a sigma-delta modulator and laser transmitter in Palmer, and then, improperly combines the sigma-delta modulator and laser transmitter of Palmer along the lines of the present invention, directly contrary to the teachings of Palmer and directly contrary to the combined teachings of Palmer and Beauducel. The examination then asserts that Palmer teaches that a sigma-delta modulator can be "used with" a laser transmitter. Palmer uses a sigma-delta modulator to merely generate a local oscillator signal, which, in and of itself, does not modulate an analog input signal nor directly drive a laser transmitter, as gleaned from the present invention that does use the sigma-delta modulator to modulate an analog input signal for

generating a binary signal driving a laser transmitter for enabling asynchronous communication.

Telling of the examination defective analysis is the failure of the examination to consider both the problem solved and the solution thereto. The examination must recognize that obviousness is a two-part analysis as to suggesting both the problem solved and the solution thereto. That is, the examination is completely silent on how the cited references teach the synchronization problem. When the cited references do not teach the problem solved, the cited references cannot possibly teach a solution thereto. The examination should at least acknowledge that the cited references only teach synchronous communications. The examination failed to recite any text in the cited references that teach specifically how the sigma-delta modulator in Palmer is to be combined with a laser to provide asynchronous communication.

While the examination may be able to locate isolated teachings of claimed elements, the combination of these elements along the lines of the claimed invention to solve the problem solved must be taught in the cited references, as it is the cited references that provide knowledge of one skilled in the art. When the examination attempts to combine prior art teachings and elements, contrary to the explicit teachings of those cited references, the examination is a product of tortured reasoning that is the hallmark of nonobviousness.

Perhaps applicant can be of assistance to the examination. Claims must be particular as to claimed elements and their cooperation. That is, inventions are not simply a bag of isolated parts. Obviousness rejections should not be made merely because claimed parts are found in separate teachings of the prior art, as nearly all inventions rely on known prior art elements, but combined in a new way. Obviousness is determined from the prior art as a whole, fairly read for what it fairly teaches as to the cooperative combination of these parts as particularly claimed, as to both the problem solved and the solution thereto.

The discussion is focused on claim 1. The invention solves the problem of required synchronized transmissions of laser signals. (See discussion of framing requirements in the background section of the application, for example on page 3 where it states that "These synchronization frames words are overhead data and are typically one to ten percent of the information data words.") The cited references do not solve the synchronized transmission problem. If the cited references do not teach the problem solved, the cited references cannot possibly teach the solution thereto. The examination did not indicate how the cited references suggested the problem solved. The solution is the use of the sigma-delta modulator for modulating an analog input signal and for driving a laser transmitter with a digital binary signal, for solving the problem of required synchronized self-clocking communications. This sigma-delta modulator, in the preferred form, provides a transmitted binary signal that is not self-clocking with synchronized transitions nor used with synchronized frame words.

Claim 1 particularly recites the cooperative elements, a sigma-delta modulator driving a laser transmitter communicating a binary laser signal. This combination need not employ synchronized laser communications, the problem solved, but rather can be used asynchronously, as a significant advancement in the art, properly deserving of patent protection.

The examination cites two references for rejecting claim 1, incorrectly suggesting that these two cited references suggest the combination of sigma-delta modulator for driving a laser transmitter for communication binary modulated laser signal. Particularly, the examination clearly states: "Beauducel et al does not specify a modulated binary laser signal", and "Palmer et al teaches a communication system wherein a sigma-delta modulator is used with a laser transmitter". This is where the examination attempts to use forbidden hindsight reconstruction, specifically through the use of the phrase "used with". The phrase "used with" is where the examination attempts to combine prior art elements, a sigma-delta modulator generating a clock signal and a laser transmitter, along the lines of the present invention where the sigma-delta modulator particularly modulates an analog input signal for generating a binary signal for particularly driving a laser transmitter, without a suggestion to do so, as a strong indication of improper hindsight reconstruction, and is where the examination attempts to combine prior art elements through tortured reasoning, which is strong evidence of nonobviousness.

This improper hindsight reconstruction becomes even more apparent when the improper suggested combination of the cited references cannot possibly be combined consistent with their teachings along the lines of the claimed invention. Palmer uses a sigma-delta modulator to generate a local clocking signal for synchronized communications in a laser communication system. Surely, the examination should recognize the difference between a local oscillator and an input signal modulator. While the sigma-delta modulator is "used-with" a laser transmitter, the sigma-delta modulator is merely used to generate a local oscillator clock signal, such as the clock signal generated by Beauducel's "SYNCHRONIZATION ELEMENT" 5. The sigma-delta modulator used in Beauducel and in the present invention is used to provide a modulated signal, whereas the sigma-delta modulator in Palmer does not, and is only used to generate a high-speed synchronization local oscillator clock signal. ("Alternatively, fractional frequency dividers using sigma-delta modulation of the feedback divider may be USED FOR THE GENERATION OF SUB-INTER MULTIPLES OF THE BASE FREQUENCY", Palmer Col. 3 line 44) Hence, it must be clearly understood that Palmer does not teach using a sigma-delta modulator for modulating the analog input, but rather uses a sigma-delta modulator for generating a digital clock signal for clocking a modulator. Though the term "used with" may be grossly accurate, that surely fails to focus the discussion on how the sigma-delta modulator is actually used in Palmer, for what Palmer fairly teaches. Palmer teaches synchronized laser communications, the very problem the present invention solves. With kind due respect, Palmer

is irrelevant to an obviousness rejection. Perhaps applicant can be of assistance.

SIGNIFICANTLY, the combination of Palmer and Beauducel, for what they fairly teach, is to replace the synchronization element 5 of Beauducel with a sigma-delta modulator of Palmer for generating the local oscillator synchronization signal. Hence, the claimed combination solution is clearly NOT remotely suggested by the combination of the cited references, and surely does not solve the problem solved of required synchronization. As such, the combination of Palmer and Beauducel teaches synchronized nonbinary laser communications and teaches away from the present invention. Also, the problem solved is not remotely suggested by the cited references. Beauducel specifically teaches SYNCHRONIZED communications using the synchronization element 5. Further, the coding circuit 6 is used to code the signal with a synchronization clock signal. "the stream of 1-bit words coming from the (sigma-delta) modulator 4 is applied directly here to a coding circuit 6 applying a predetermined coding allowing a clock signal to be conveyed at the same time as the signals, …, suited to an optical type transmission". Beauducel specifically teaches away from the use of binary signal. Hence, Beauducel teaches non-binary synchronized communications, the very problem that the present invention solves. Palmer teaches a system for use in an OC-XX or a STS-XX SYNCHRONOUS OTPICAL NETWORK. Hence, Palmer also teaches synchronized optical communications, that coincidentally uses a sigma-delta modulator to generate a local oscillator clocking signal. Hence, the combination of Beauducel and Palmer does not

suggest using a sigma-delta modulator for directly modulating an analog input into an output binary data stream for driving a laser transmitter. Hence, both Beauducel and Palmer teach optical SYNCHRONOUS communication, and do not remotely suggest the problem solved, and as such, cannot possibly suggest the solution thereto, as presently claimed. In fact, the cited references teach just the opposite of the present invention.

The examination states that Beauducel teaches that different transmitters can be used, and "Based on this, the examiner turns to Palmer to show that it is well known in the art to combine a sigma delta modulator and a laser in an optical transmission system". This is the classical BAG-OF-PARTS rejection based upon forbidden hindsight reconstruction, as it is devoid of any discussion on how the sigma-delta modulator in Palmer is actually "used with" the laser system, and how it can be combined with Beauducel. When one fairly reads Palmer, it is clear that the sigma-delta modulator is not modulating the analog input for driving a laser modulator, but rather is merely used for generating a clock for synchronously driving the data stream modulator that in turn drive the laser transmitter. The cited references teach synchronous communications. The inventor here has proceeded directly contrary, and hence, the cited references are strong evidence of nonobviousness.

Conclusions

(1) The cited references do not suggest using a sigma-delta modulator for modulating an analog input into a binary signal for laser communications.

(2) The cited references do not suggest the problem of synchronous laser communications, the problem solved by the present invention, as both of the cited references teach synchronous communication, and as such, cannot possibly suggest the problem solved, nor possibly, the solution thereto.

3) The cited references do not suggest the claimed invention, that uses a sigma-delta modulator for modulating an analog input signal into a binary signal for laser communications, for solving the problem required synchronous laser communications.

(4) The cited references, when combined according to their own teachings, teach using a sigma-delta modulator (as in Palmer) for generating a local clock signal (as in Palmer and Beauducel) for driving another sigma-delta modulator (as in Beauducel) for generating a nonbinary synchronized transmission signal.

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(5) The cited references do not teach the solution nor the problem, and on both aspects, the claimed invention is nonobvious. As claim 1 is patentable over the cited references, the remaining dependent claims are equally allowable. Applicant requests allowance of the claims.

Respectfully Submitted

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CERTIFICATE OF MAILING

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